UMR 8184
Thema
THéorie Économique, Modélisation et Applications

THEMA Working Paper n°2017-18
Université de Cergy-Pontoise, France

Education, social capital and political participation
Evidence from school construction in Malian villages

Pierre André, Paul Maarek

August 2017

UNIVERSITÉ de Cergy-Pontoise
CNRS CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

Education, social capital and political participation Evidence from school construction in Malian villages[*]

Pierre André[†] and Paul Maarek[‡]

August 30, 2017

Abstract

Using a nationally representative household survey from Mali with retrospective information on school supply, we estimate the effect of opening new schools on education and on social capital formation. I compare the difference in educational attainment between individuals below and above the age of 9 at a school opening date using a quasi regression discontinuity design. School openings increase school enrollment; they also increase the participation in village associations and the involvement in local political life. The effect on political participation is concentrated in the eldest cohorts of the village with education, aged more than 40; this is not surprising: the eldest occupy a pivotal role in the social life of African villages. Also, the effect of education is concentrated on individuals belonging to a chief family of the village, so education seems to change local political power inside the dominant group of the village.

Key words: Education, political participation, school openings, Mali

[*]We are extremely indebted to Lisa Chauvet, Flore Gubert and Sandrine Mesplé-Somps for the access to all the data used in this paper. We acknowledge Lisa, Flore and Sandrine and my colleagues at Université de Cergy-Pontoise for their comments on earlier presentations of this work. We are responsible for any remaining error in the manuscript.

[†]Université de Cergy-Pontoise, THEMA, F-95000 Cergy-Pontoise, pierre.andre@u-cergy.fr

[‡]Université de Cergy-Pontoise, THEMA, F-95000 Cergy-Pontoise, paul.maarek@u-cergy.fr

1 Introduction

Social capital and political participation are crucial ingredients to sustain and consolidate democratic institutions and to maintain a well-functioning market economy[1]. Very early, De Tocqueville (1835) observed the emerging American democracy and had the intuition that social capital, in the form of voluntary associations and dense civil society, helps to build stable and democratic political institutions. An active democracy also needs the participation and interest of citizens in the political process, in the form of voting and running in the electoral competition. This participation imposes constraints on the executive power and forces the government to represent a broader part of the population.

Creating social capital, civic engagement and political participation thus matters for public policy. According to Fukuyama (2001) concerning social capital, "it has been seen as a task for second generation of economic reforms". Unlike many other economic outcomes, we know very little about the emergence of social capital, civic engagement and political participation, and more importantly, how public policies can shape them.

This paper tries to contribute to this debate, we examine the role of education in the emergence of social capital in the form of civic engagement and in the emergence of political participation in the form of voting and running for elections. More precisely, does the construction of a school in areas with little school infrastructure helps to increase the levels of civic engagement and of political participation? We exploit school constructions in the rural villages of Mali as a credible exogeneous shock in order to determine a causal effect of education on civic engagement and on political participation.

The econometric estimations use data from the rural part of a nationally representative Malian household survey with retrospective information on school supply. The estimations are based on the strong non-linearity of the effect of a school opening: children aged 7 or less when the school opens benefit from that school, and children aged 11 or more when the school opens do not benefit from this school. We mimic regression discontinuity designs to estimate the effect of a school opening; the difference is that children aged 8 to 10 at a school opening date are partially treated and excluded from the estimation. The main advantage of villages is that we can observe school supply easily: the alternatives to the schools of the village are limited (if existent). The chances to have ever been to school are higher in the treated age group by approximately 10 to 20 percentage points (which *triples* enrollment rates for individuals aged 40 or more). Endogeneous sample selection is unlikely to biase significantly these estimations. Indeed, we show that the treated age group and the control age group share the same size and the same average observable characteristics.

We estimate the effect of education on civic engagement and on political participation. Putnam (1994, A2001) or Bjørnskov (2006) point three categories (or products) of social capital: trust, social norms and civic engagement (e.g. associational activities). In this paper, we focus on the civic engagement part for which we have detailed information. Measuring this form of social capital is easier; in contrary, norms and trust are measured with subjective questions and more prone to measurement errors. We measure three dimensions of civic engagement: membership of associations, presence in

[1]See Algan and Cahuc (2010) for economic growth, Algan, Cahuc, and Sangnier (2016) for the size of government, Aghion, Algan, Cahuc, and Shleifer (2010) for the quality of regulation or Aghion, Algan, and Cahuc (2011) for the quality of labor market institutions

local councils and support of political parties.

Political participation is usually not included in the definition of social capital in political science. However, it is a potential consequence of social capital, and importantly, social capital is a plausible key in the effect of education on political participation. We have three measures of political participation: (1) whether respondents of the survey run for local elections, (2) whether they are enrolled on electoral registers and voted, (3) the number and identity of municipal council members from the village times year of birth.

In addition, the data measure the social background of respondents and in particular whether the respondents belong to a family chief (elite). This allows to test for a differentiated effect between elite members and others.

The estimated effect of school openings on civic engagement in the form of association memberships and support for political parties is extremely strong. However, the evidence on political participation is mixed. On the one hand, education does not significantly affect the chances to vote or to be candidate to local elections. There are only a few candidates to election, which may explain this lack of statistical power: the sign for running for election is positive and the coefficient is quite large and close to significance. On the other hand, the effect of education on the number of municipal council members from the village is strong.

We find these effects to be very heterogenous in the population. In most cases, the effects are statistically significant for the individuals aged 40 or more only. This is not surprising given the very strong weight of the eldest in local collective decisions in Malian villages. According to Johnson (2003) or Schulz (2012), the organization and structure of the society in Mali is gerontocratic: the power is in the hands of the eldest, seen as wise persons. Here, the effect of education on civic engagement and political participation are unsurprisingly be concentrated on this population.

Also, we find a strong and statistically significant effect for the school openings with low enrollment rates in the village prior to the school opening, and when the person belongs to the family of a village leader. This last result gives some new insights on Elite capture. Social capital is not necessarily a good thing. An important fraction of the civil society can be seen as interest groups and there is no guaranty that it represents real public interests. We tackle this important question by investigating precisely who is involved in voluntary association. It appears that the effect of education is concentrated among individuals related to the village leader (half of the population). Education seems to affect civic engagement in associations mostly through a redistribution of roles toward some members of the dominant group of the village. Second our results on political participation suggest that a shock in school supply leads to an increase in the number of elected individuals from the village but only within the elite members. This should increase the proportion of elected representative that belong to a familly chief which may redistribute power in the society. This is consistent with Acemoglu and Robinson (2008) for instance who argue that polity in developing countries (even in democracies) can be captured by Elite group that can organize themselve.

Thus we can give some new insights concerning Elite capture in an emerging democracy with weak political institutions (see Acemoglu and Robinson, 2008, for instance). If the creation of social capital in the form of involvment in associations concern only Elite member or if education lead an increase in the number of elected individuals from the village but only within the elite members, once could

worry that shock to school supply also redistribute power in the society at the benefit of the Elite which may not pursue policies in line with general interest (Acemoglu and Robinson, 2001, Acemoglu, 2010, Dorsch and Maarek, 2015).

This paper contributes to an important and growing literature on the role of schooling in the formation of social capital, civic engagement and political participation. Friedman, Kremer, Miguel, and Thornton (2011), shows mitigated evidence on the returns to education on civic life in Kenya. They use a controlled experiment increasing the education of girls. A few years after the experiment, the young women of the treatment group know better the political system, but they accept less easily political authority. They are not more involved in community participation, and consider political violence more legitimate. More recently and maybe very closely related to our paper, Larreguy and Marshall (2017) find a positive impact of education on civic engagement and political participation (voting only) using very similar variable than ours for Nigeria. Also, Croke, Grossman, Larreguy, and Marshall (2016) find a negative impact of education on political participation (voting) in Zimbabwe. Both papers use some important educational reforms that expended school enrollement in those countries and compare civic engagement and political participation for cohorts who benefited from the reform and others, using a difference in difference setting. We offer several contributions with respect to those papers. First, we have information on the exact date of school openning in each village which allow a better identification of the effects of school supply. As schools have openned at different time in different villages we can compare cohorts both within and across villages. For the two natural experiments previously used in the literature, one could imagine a crucial change in the political, economic or social environment. Should this change be simultaneous with the reforms, it could also have impacted civic engagement and political participation of the treated age groups. Also, we tackle the important question of the distribution of power in the society by using the social background of individuals. Third we focus on areas (rural villages in mali) in which school supply was very low prior to school openning. In other words, the shock to school supply we identify should have a very strong impact on the enrollement rate. Fourth we also focus on other forms of political participation: engagement in the electoral competition and to have been elected at the municipality level. The evidence we find is consistent with those two papers. As in Larreguy and Marshall (2017) we find a positive impact of education on volontary association. Also we find no effect on political participation (voting), in line with the mixed results (positive for on paper and negative for the other) of those papers. However we find some evidence on the participation to the electoral competition.

More broadly this paper is related to the impact of education on democracy. Many papers point the positive impact of education on democracy (see for instance Crespo Cuaresma and Oberdabernig, 2014, Murtin and Wacziarg, 2014, Fortunato and Panizza, 2015, Sanborn and Thyne, 2014, Glaeser, Ponzetto, and Shleifer, 2007). On the other hand a huge literature in Political sciences, starting from De Tocqueville (1835) points the role of social capital in sustaining democratic institutions. For instance Paxton (2002) show that a circular relationship exists between social capital (organisational density) and democracy. A dense civil society favors democratic transitions and democratic consolidation and democracy foster organisational density of society. This paper contributes to this literature by investigating the chanels through which education may affect democracy.

This paper contributes to the determinant of social capital formation. Many papers study theoret-

ically how trust and norms emerge in a society through reapeted interactions of individuals in society (See Tabellini, 2008, Acemoglu and Jackson, 2014 or Bidner and Francois, 2011). Empirically some papers points the role of some regulations that may foster distrust (see for instance Aghion et al., 2010). Dearmon and Grier (2009) show, using a panel data set, that development is a crutial determinant of social capital. We contribute to this literature by showing how the emergence of schooling in the society affects the stock of social capital in the form of civic engagement. Educational institutions do not only promote human capital accumulation. It is also a place in which individuals interact at early stages of they life and where social capital is directly transmitted in the form of rules and norms that may promote civic and political engagement.

This paper also provide some new results on the power sharing in developing economies and emerging democracies in which Elite may enjoy a disproportionate de facto power (see Acemoglu 2006, 2008 for instance). We show that individuals connected to the Elite group in the villages disproportionately contributes to the formation of social capital and have a higher probability of being elected. School oppening seems to be associated with a redistribution of power in the villages in favor of the elite group.

Finally, this paper contributes to the literature dealing with the political selection process in an emerging democracy. We show that in an environment in which educated citizens are not numerous, the mean education attainment of individual is crutial to have some competent (proxied by education) politicians in office. Educated politicians have been found to perform better in office (Besley, Montalvo, and Reynal-Querol, 2011, for instance). In developed democratic countries the matter in political selection is not that there is no potentially qualified candidates in the pool of citizens but to design good incentives to make then participate to the electoral competition.

Rest of the paper is organized as follow. Section 2 present the data we use the paper. In section 3, we introduce our empirical strategy. In section 4 we present our results on civic engagement and political participation in the form of voting and running to a municipal election. Section 5 present our results on the number of elected individuals in villages in which school have been oppened.

2 Data

2.1 Surveys

This papers uses two datasets: the main dataset is the EMOP survey[2], and some statistics use the Malian population census of 2009.

The EMOP survey is a nationally representative household survey conducted in Mali in 2011. In rural areas, it surveyed approximately 10% of the villages, and a few households in each village. The household survey includes the usual demographic information for all the household members. In addition, it includes information**s** on their participation to the local politic**al** life and to associations. In rural areas, the village questionnaire informs on all the primary schools of the village and more importantly on their opening dates which are central in our identification strategy. In addition, the municipality (*commune*) questionnaire includes information**s** on the composition of the municipal council, with the age and village of origin of each member.

[2]Enquète modulaire et permanente auprès des ménages.

The Malian population census of 2009 includes the usual demographic informations of all the population. The data collected includes the village of each household. Hence it is possible to restrict the population census to the villages included in the EMOP survey.

None of these surveys include any information on the place of birth of respondents. This paper uses the population that lives in the villages surveyed by EMOP at the date of the surveys. However, the EMOP survey includes some information on former migrations, we will use this information to tackle some selection issues.

Table 1 gives the usual descriptive statistics table for the individual variables.

2.2 Measure of social capital, civic life and political participation

Social capital in the form of civic engagement and political participation is measured by the EMOP survey, which includes many questions on the civic life and political participation of household members. The indexes we use are a sum of several sub-indexes. Note that an aggregation with principal component analysis gives similar results.We also use the sub indexes separately in some regressions. We first start with the measures of civic engagement.

Number of association memberships This variable corresponds to the number of association memberships the respondent recorded (and is censored at 3). The survey recorded the following type of associations: local committee (management of the water network, of the school or of the health center), neighborhood association, religious association, NGO, women's association, and professional association. We aggregate the religious associations, NGO, women's associations and professional associations in "other associations".

This is our main measure for social capital. In this paper we focus on the civic engagement part of social capital for which we have detailed information (Putnam, 2001 or Bjørnskov, 2006, point three categories of social capital). We have two alternative measures of civic engagement: the presence in local councils and the support of political parties.

Presence in local councils This index assesses the participation of the individuals to local councils, as elected or unelected participant. It is the sum of two sub-indices: a dummy taking value 1 when the person has ever attended a municipal council meeting and a dummy taking value 1 when the person has ever attended a village council meeting.

Supports political parties This index assesses the involvement of the person to national political life. It is the sum of three sub-indices: a dummy taking value 1 when the person has ever been member of a political party, a dummy taking value 1 when the respondent feels close to a political party, and a dummy taking value 1 when the person has contributed to an electoral campaign (in kind or in cash).

We now turn to political participation, which is not included in the standard definition of social capital in political science. However, it is a potential consequence of social capital, and importantly, social capital is a plausible key in the effect of education on political participation.

Candidate to local elections This index assesses the participation of individuals to local elections. It is the sum of three sub-indices: a dummy taking value 1 when the person has been candidate to the municipal elections since 1998, a dummy taking value 1 when the person has been elected to the municipal council since 1998, a dummy taking value 1 when the person has been elected as mayor since 1998.

Participation to elections This index assesses the participation to official elections. It is the sum of four dummies: two dummies taking value 1 when the person was enrolled on the electoral lists for the presidential elections in 2007 and for the local elections in 2009, and two dummies taking value 1 when the person has voted at these elections.

Municipal council members The EMOP survey gives the list of all the members of the municipal council of the municipalities surveyed by EMOP, their age and their village of origin. (There are several villages per municipality in Mali.) This list give some information on the political participation of the underlying population – the full population of the villages. This information is treated separately: this measure is exhaustive at the village level. (The other measures of political participation are available only for the households surveyed by EMOP.)

2.3 Other variables

Two other variables require additional explanations:

Low/high enrollment prior to the school opening For each school, the 2009 population census gives the education of the cohorts born 20 to 25 years before the school opening. The school has a low enrollment prior to the school opening when less than 15% of these cohorts have ever been to school according to the population census. Otherwise, the school has a high enrollment prior to the school opening.

Chief family This dummy takes value 1 when the household head reports being from the family either of the village chief or of the "land chief".[3] This measure corresponds to a quite extensive definition of the elite. Indeed, 62% of the household members aged 20 or more belong to a chief's familly.

3 Empirical strategy

This paper seeks to identify the effect of education on civic engagement and political participation.

$$P_{vci} = \mu_v^P + \alpha E_{vci} + X_{vci}\beta^P + \varepsilon_{vci}^P \tag{1}$$

where P_{vci} measures a dimension of social capital or of political participation of i from village v and cohort c. E_{vci} is a dummy taking value 1 when person i has ever been to school: the coefficient of

[3] *chef de terre* or *dougou kolo tigui*

interest is α. μ_v^P is a set of village dummies, X_{vci} is a set of explanatory variables given by equation (3).

Of course in equation (1), education is probably correlated with the error term due to unobserved individual characteristics. For example, the "elite" of the village may get more education because they are wealthier, or E_{vci} and P_{vci} may be correlated with individual ability. Also, children who attend school may come from families with higher human capital which is correlated with social capital which can be transmitted to offspring within the family circle. This calls for an instrumental variable in order to estimate α properly.

In this paper, the instrumental variable is based on school opening dates. School opening dates provide with a shock on school supply; and this shock affects only some age groups of the village. I call "treated age group" the persons aged 7 or less at a school opening date, and I call "control age group" the persons aged 11 or more at a school opening date. People aged 8 to 10 are excluded from the sample because they are partially treated: the official school entry age is seven in Mali, but actual school entry ages are variable. This is similar to "donut regressions" that usually test heaping problems around the threshold, usually because of a manipulation of the assignment variable (Barreca, Guldi, Lindo, and Waddell, 2011). Our problem is different here: individuals close to the threshold are partially treated. Croke et al. (2016) also exlude partially treated individuals in order to improve identification. We denote the threated age group using the binary variable $\mathcal{T}_{iv}$ which takes value one for threated individuals i in village v.

Figure 1 plots education as a function of age at the school opening date. It shows that school openings make a real difference in Mali. In this Figure, less than 15% of the control age group has ever been to school, more than 20% of treated age group has ever been to school.[4] Figure 1 also shows that enrollment rates are really discontinuous around the school opening date.

School enrollment increases over time in Mali, and this may explain a part of the difference in education between the treated age group and the control age group. So as to control for this, the main specification controls for the trends in education between cohorts. Precisely, I mimic a regression discontinuity design based on the age at school opening date a_{sc}. Regression discontinuity designs control for a trend based on the discontinuity variable (a_{sc}). The trend variable is therfore $(a_{sc} - 9)$ and we control for two different trends in the control and in the treatment age groups. The first stage is thus:

$$E_{vci} = \mu_v^E + \gamma\mathcal{T}_{iv} + \theta_r(a_{sc} - 9)(1-\mathcal{T}_{iv}) + \theta_l(a_{sc} - 9)\mathcal{T}_{iv} + \varepsilon_{vci}^E \tag{2}$$

The estimation sample includes the treated age group (born between 7 years before a school opening and 5 years after) and the control age group (born between 25 years before and 11 years before a school opening). The discontinuity threshold is 9 (between 7 and 11). As in regression discontinuity designs, we focus on observations with a_{sc} close to the threshold; unlike in regression discontinuity designs, we drop the observations very close to the threshold, because they may be partially treated. Finally, in villages with several schools, we take into account one school per individual.[5]

[4] School openings does not seem to affect the last grade attended by those who started school – see Table A.1 in Appendix A.1 – so I focus on having ever been enrolled.

[5] More precisely, for people aged 40 or more, I take into account the first school that opened after 1937. For people

γ is the coefficient of interest of equation (2): the effect of the school opening on education. θ_r controls for an age trend in the control age group, θ_l control for an age trend in the treatment age group.

3.1 Main equations

Equation (2) is the first stage for the estimation of (1). This leads to the following instrumental variables model:

$$\begin{cases} P_{vci} = \mu_v^P + \quad \alpha E_{vci} \quad + \theta_r^P (a_{sc} - 9)(1 - \mathcal{T}_{iv}) + \theta_l^P (a_{sc} - 9)\mathcal{T}_{iv} + \varepsilon_{vci}^P \\ E_{vci} = \mu_v^E + \quad \gamma \mathcal{T}_{iv} \quad + \theta_r^E (a_{sc} - 9)(1 - \mathcal{T}_{iv}) + \theta_l^E (a_{sc} - 9)\mathcal{T}_{iv} + \varepsilon_{vci}^E \end{cases} \tag{3}$$

In this model, $\mathcal{T}_{iv}$ is used as an instrument for E_{vci} in the estimate of the effects of education on social capital and on political participation. More precisely, the instrument is the discontinuity of the effect of a_{sc}, the school opening date, on enrollment rate. As usual in regression discontinuity design settings, all specifications control specific trends in enrollment rates for the threated age group ($(a_{sc} - 9)\mathcal{T}_{iv}$) and for the control age group ($(a_{sc} - 9)(1 - \mathcal{T}_{iv})$).

3.2 Selection

The data include the individuals that live in the villages surveyed by EMOP at the time of the survey (and only these observations), as the village of origin of migrants is unknown. This can raise a selection issue, as education may affect migrations. For example, if educated people migrate to cities more often or if school construction in a village attract some families from other villages with different characteristics, the sample may be different in the treatment age group and in the control age group.

However, if selection is partly related to observable characteristics, the selection has testable implications. Indeed, school openings would affect the number of observations and/or the (few) observable characteristics unaffected by own education. This leads to the following specification:

$$Nbobs_{vc} = \mu_v^{S1} + \gamma^{S1}\mathcal{T}_{iv} + \theta_r^{S1}(a_{sc} - 9)(1 - \mathcal{T}_{iv}) + \theta_l^{S1}(a_{sc} - 9)\mathcal{T}_{iv} + \varepsilon_{vc}^{S1} \tag{4}$$

$$\bar{x}_{vc} = \mu_v^{S2} + \gamma^{S2}\mathcal{T}_{iv} + \theta_r^{S2}(a_{sc} - 9)(1 - \mathcal{T}_{iv}) + \theta_l^{S2}(a_{sc} - 9)\mathcal{T}_{iv} + \varepsilon_{vci}^{S2} \tag{5}$$

where $Nbobs_{vc}$ is the number of observations in village v and cohort c, and $\bar{x}_{vc}$ is some average characteristics of these observations. The test of $\gamma^S = 0$ tests for the effect of education on selection.

4 Empirical results

4.1 First Stage

All the equations are estimated using the EMOP survey data. We estimate our models separately for two age groups: the household members aged 20 to 39 in 2011, and the household members aged 40 or more in 2011. Indeed, the eldest occupy a central role in the organization of rural societies in

aged 20 to 39, I take into account the first school that opened after 1971.

Mali. According to Johnson (2003) or Schulz (2012), the organization and structure of the society in Mali is gerontocratic: the power is in the hands of the eldest, seen as wise persons. This creates a vertical organization of the society, with a pivotal role of the eldest. Education does probably not overturn these structures – especially in rural areas, where traditions are very strong. Hence, the effect of education on civic engagement and political participation may be concentrated on this population. The first stage estimations refers to equation (2), the first stage of model (3).

Table 2 gives the results of this estimation (corresponding to equation (2)). Columns 1 to 4 give the results for individuals aged 40 or more, the OLS estimates that a school opening increases the chances to start primary school by approximately 20 p.p. for the population of the village. Figure 2 compares the model estimated in colum 1 with the descriptive statistics. The addition of village fixed-effects (column 2) or village fixed-effects and age dummies (column 3) does not change much the estimated coefficient (from 0.222 to 0.208). The magnitude is substantial: it corresponds to an increase of enrollment rate by a factor three. This is not surprising: there were very few primary schools in Mali at the time. This suggest identification of the effect of education should be particularly strong.

The addition of a second order polynomials in age a_{sc} increases the coefficient (column 4), but the corresponding coefficients are not significant. Figure 2 suggests there may be some overfitting in column 4. Indeed, magnitude of the discontinuity in Figure 2 is clearly around 20 p.p.[6] So the main specification for the first stage is in column 2.

Columns 5 to 8 give the results for individuals aged 20 to 39. The estimated effect of a school opening is smaller. Figure 3 compares the model estimated in column 5 with the descriptive statistics. Columns 6 and 7 and 8 include village fixed effects and the coefficient are statistically different from 0. The magnitude of the discontinuity is smaller: between 10 p.p. and 15 p.p. This is still substantial and corresponds to a 50% increase in the enrollment rate for this generation.

The corresponding F-test are sufficient for individuals aged 40 or more (18.01 in Column 2). The F-test is relatively small (8.586) for the individuals aged 20 to 39 (Column 5), but still sufficient to consider the instrument (relative bias around 15% according to the Stock and Yogo criteria).

4.2 Selection

Table 2, Figures 2 and 3 show that the first cohorts of a village affected by a school opening have more education than the others. However, this estimation (and the other estimations in the paper) may be affected by sample selection. Indeed, education may affect migrations, and a part of the treated age group may have left the village because of education. Alternatively, the opening of a new school in the village may attract some families from other neighbouring villages.

This selection issue can have two testable consequences: the treated age group may have more observations than the control age group (equation (4)), and the characteristics of the two groups may be different (equation (5)). These two equations are estimated in Table 3 for individuals aged 40 or more, and in Table 4 for individuals aged 20 to 39.

Tables 3 and 4 do not show any effect of school opening on selection on the sample size (in column 1 of both Tables). The coefficient $\hat{\theta}$ is close to zero, and is not statistically significant. Of course,

[6]Further investigations show that the estimated second-order polynomial on the treated group (on the right-hand side) of Figure 2 is U-shaped and tend to overestimate enrollment probabilities in the neighborhood of the discontinuity

the average number observations by village and cohort included in EMOP is small, and this might limit the power of the estimation. (We report the average of the dependent variables at the bottom of Tables 3 and 4.) In Appendix A.2, Figures A.2 and A.3 continue this analysis with the census data. These Figures plot the number of observations by village and age as a function of age at a school opening date. They do not show any sign of sample selection. (We do not provide regressions based on the census data here, they confirm these findings.)

Tables 3 and 4 also investigate the number of former household members reported to have left in column 2. For the young age group, fewer members of the household are reported to have left when the age group is affected by a school opening. However, this coefficient is statistically significant at the 10% level only. There are 14 coefficients in Tables 3 and 4, chance explains plausibly the significance at the 10% level of one coefficient.

For current household members, the chances to have left the village in the past seem unrelated to the consequences of the school opening. Besides, the data offer a few variables that cannot be caused by education. Gender seems uncorrelated with school openings in the selected sample. Being from the village chief family or from the founding family is not correlated either. In the end, these estimations do not detect any source of selection in our data.

4.3 Effect of education on civic engagement political participation

This section focuses on the observation of the effect of school openings on civic engagement and political participation. Equation (3) gives the model estimated in Tables 5 and 7 with OLS (odd-numbered columns) and with instrumental variables (even-numbered columns). The instrumental variables estimate the effect of education on civic engagement and political participation with differences in political participation between the treated age group (aged 7 or less at a school opening date) and the control age group (aged 11 or more).

In Table 5, we can see that education increases the number of association memberships (OLS and IVs), the presence in local councils (OLS) and the support of political parties (OLS and IVs). The IVs are much less precise than the OLS, and they are much bigger in magnitude than the OLS coefficient when statistically different from 0. The magnitude is substantial: having been to school increases these indexes between 1 and 1.5 times their standard deviation. Education seems to affect mostly civic engagement rather than political participation. Indeed, education does not seem to affect the probability to be candidate to a local election (columns 3 and 4 of table 5) or the electoral participation variable which correspond to (i) voting (ii) being enrolled on the electoral lists (columns 9 and 10 of table 5). This is consistent with the mixed evidence on the impact of education on political participation. For electoral participation, Larreguy and Marshall (2017) find a positive impact of education on participation in Nigeria whereas Croke et al. (2016) find a negative impact in Zimbabwe.

Table 6 splits the IV coefficients between sub-indices. For the sub-indices of our association memberships variable, having been to school increases the chances to be number of a local management commitees by 0.35 p.p. and the chances to be in the board of these commitees by 20 p.p.; it also increase the chances to be member of a neighborhood association by 22 p.p.. However, education does not seem to affect the membership in other associations. For the sub-indices of the support for political parties, the chances to support a political party increases by 70 p.p.. However, the sub-indices

for political party membership and for the involvment in an electoral campaign sub-indices are not affected by education. The magnitude of the coefficients is extreme (especially in the case of the sub-index "supports a party"). We claim that these extreme magnitudes can be explained by the fact that these effects apply to a very small part of the population.

Table 7 shows that education does not seem to increase political participation for individuals aged less than 40. The OLS coefficients are often close to zero, rarely significant, and often negative. The IV coefficients are not significant.

Figure 4 plots the variables of civic engagement and political participation of Table 6 as a function of age at the school opening date. This gives a graphical version of the reduced-form of model (3). The oldest cohorts of the treated age group have a particularly high level of civic engagement while the youngest cohort of the treated age group have a low level of civic engagement (especially in the case of local commitees and neighborhood associations). So the effect of education on civic engagement is plausibly much stronger for the oldest cohorts of the treated age group: this is a local effect that cannot be extended to the full population. More generally, Sahelian countries have the lowest levels of education in the world. These countries' communities give a very strong weight to the eldest in local collective decisions, and the eldest is the age group with the lowest levels of education. As a result, the shock in school supply likely affects strongly this age group given (i) its key role in the organization of civic life in the village (ii) the fact that a shock to school supply is likely to have affected the enrollement rate for this age group disproportionally.

So as to push this idea a bit further, it is also possible to compare the effect of education on political participation between several types of individuals.

4.4 Heterogeneity of the effect of education on political participation

In this section, we split the effect of education on civic engagement and political participation between school openings depending on school enrollment prior to the school opening, between household belonging to the founding family of the village and other households, and between genders.

The first specification splits the effect of education on political participation between school openings with high or low education prior to the school opening – The threshold we use cooresponds to an enrollement rate of 15%. We estimate equation (3) separately for the two subsample, apart from the village fixed-effects (see equation (B.1) in appendix for the details).

Table 8 reports the coefficients α^L (for schools with low enrollment prior to the opening) and α^U (for schools with high enrollment prior to the opening). Schools with low enrollment prior to the school openings are the only schools that significantly increase the "number of association memberships", and the index for "support political parties". The difference between the coefficients is statistically significant for some of the sub-indices (number of local commitees, board of local commitees, and supports a party). In areas with high enrollment prior to the school opening, the presence of educated individuals may have had already fostered associational development even before the respondents could have got their education.

It is also possible to interact the estimations with an individual characteristic. We split the sample between between household belonging to a chief family of the village and other households. We estimate (3) separately on both subsamples, apart from village fixed-effects (see equation (B.2) in

appendix for the details).

Table 9 splits the reduced form estimates between chief families and other families. The effect of school openings on association membership exists only in chief families. The test for the difference between the coefficients α^0 and α^1 is reported in the bottom of the Table, the differences are significant at the 1% level. On the contrary, The effect of school openings on support to political parties is significant only in non-chief families, but the difference with the chief families is not significant.

We believe this result emphasizes the problems related to an unequal distribution of social capital (here: association memberships, organizing the civil society) (See Fukuyama, 2001). Here social capital formation seems to give a better role to the pre-existent elite of the villages: the elite plays a crucial role to organize the associations, and education could give them even more power. In other words, education may help the elite to participate to the civil society which is closed for some reason to non-elite citizens.

In Appendix, Table A.1 splits the reduced form estimates between women and men. The estimates of the effect of education are never significant, probably because the model is not well identified: the test of underidentification fails to reject the null. The magnitude of the coefficients is substantially greater among males, but we cannot conclude because of the lack of precision of our estimates. We divided the sample by two and lost too much statistical power.

4.5 Reduced form on municipal councils

In this section we test more specifically the political participation of treated individuals by looking directly at electoral outcomes. The EMOP survey gives the full list of the municipal council members in the municipalities surveyed by EMOP. This list can be used to measure the effect of the effect of school openings on the chances to have a municipal council member in the treated age group.

The literature usually considers as given the proportion of educated people (a proxy for the competence) and tries to understand the political selection process. That is, are educated people more likely to run for elections and to be elected ? (see Besley, 2005, Besley et al., 2011, Dal Bó, Finan, Folke, Persson, and Rickne, 2017, Ferraz and Finan, 2010, Keane and Merlo, 2010, for instance) Generally, in the countries studied previously (and/or for the selection of presidents), there are enough qualified people in the population and the literature questions whether qualified individuals compete and whether they win elections.

In Malian villages, the context is different as the supply for educated people is scarce. We estimate whether an increase in the share of educated people in the village-cohort may affect the number of representatives at a higher geographic level (the municipality). This effect likely represents an additional social return to education, as more educated representatives seems to conduct much better policies (see Besley et al., 2011, 2011 for instance).

More importantly, the data include social background of elected individuals. Thus, we can estimate whether education increases the chances to be elected, but also whether it promotes the election of individuals outside the traditional elite and increases the representativity of elected individuals. Indeed, the capture of de facto power by the members of the elite is an important concern in democracies, and this problem is particularly salient in young democracies with weak institutions (see Acemoglu and Robinson, 2008, for instance). To our knowledge this is the first study using data able to tackle

such a research question.

In order to measure the effect of school supply on the quality of elected politicians we estimate the following specification:

$$\text{Nb}_{vc} = \mu_v^N + \gamma_{iv}^N \mathcal{T}_{iv} + \theta_r^E (a_{sc} - 9)(1 - \mathcal{T}_{iv}) + \theta_l^E (a_{sc} - 9)\mathcal{T}_{iv} + \varepsilon_{vc}^N \tag{6}$$

where Nb_{vc} is the number of municipal council member per village and cohort in 2011. Indeed, we have the age of representatives and their village of origin, so we compute the number of municipal representative in 2011 for every village and every cohort. Importantly, there are several villages per municipality in Mali. Alternatively, Nb_{vc} can also be the number of adjunct or mayors. The estimation sample is all the village-ages with or without municipal council member.

Table 10 estimates equation (6), and education increases the number of council members. The effect is substantial: when age is above 40, the treated age group have 0.1 additional municipal council members per year of birth, with a sample average of 0.1; when the age is below 40, the treated age group has on average 0.05 additional municipal council members, with a sample average of 0.02. This is interesting: the impact is positive for both age groups, in contrary to the others results. However, consistently with the other results, the impact remains substantially higher for the eldest. Education does not significantly affect the chances to have an adjunct or a mayor in the village-cohort, even if the effect is close to be significant at the 15% level. These estimations probably lack power, as having an adjunct of a mayor is relatively rare, and that plausibly explains why the coefficient are insignificant.

Figure 5 shows the estimation graphically: the number of municipal council members is at least three times bigger in the treated age group than in the control age group. Besides, the pattern is similar, although not statistically significant, for the number of adjuncts or mayor. Finally, the graphics follow the same patterns as in Figure 4: the political participation of individuals born 0 to 7 years after a school opening is extremely high.

We give evidence on a type of social return to education that has never studied previously (to our knowledge). Here, an increase in the school supply affects the proportion of educated individuals in the treatment cohorts, and we have seen in section 4.1 that the treatment age groups have more education than the control age groups. This is likely to increase electoral competition and the number of credible candidates. This could increase in turn the average quality of elected officials.

It is also possible to assess the heterogeneity of the effects of model (6). Table 11 splits the effect of a school opening between schools with low or high enrollment prior to the school opening. The effect of a school opening on the number of municipal council members exists only when the school enrollment prior to the school opening is low, which is similar as Table 8. This confirms our intuition: an increase in the supply of skills affects the quality of politicians only where the supply of educated citizens is scarce. The literature focuses on is how to attact skilled candidates in presidential positions: in this context, the supply of skilled individuals is probably always sufficient. In the case of local leaders of developing countries, the communities may fall short of supply for skilled candidates.

Table 12 splits the effects of Table 10 between the number of council members from a chief family and not from a chief family, and between the number of males and female council members. Similarly to Table 9, the number of council members from a chief family is affected by school openings, and the number of members not from a chief family is not affected by school openings.

This result for chief families is in line with many theories of elite capture in developing economies and emerging democracies (see for instance Acemoglu and Robinson, 2008). In our case, the shock to school supply gives more power to some members of the existing elite, and not for non-elite citizens. Non-elite citizens are excluded from the benefits of education in terms of power.

A huge literature suggests elites often use their powers to biase public policies for their benefit (See Acemoglu and Robinson (2001) for the introduction of new technologies, Acemoglu, 2010 or Dorsch and Maarek, 2015 for entry barriers). This also echoes the works of Dal Bó et al. (2017) on Sweden, they study whether representative democracy to provides a broad representation of the population: does the social background of elected politician resemble the entire population? We show this may not be the case in the case of Mali, an emerging democracy. Education increases the number of representatives for elite but the others do not benefit from this effect. This could potentially modify the composition of municipal councils in favor of the elite.

Table 12 also shows that the effect of school openings on the number of council members exists only for males. This is probably because very few council members are females (only 8.2% of all the council members of EMOP municipalities), which makes the statistical estimation much more imprecise. This result suggests that education does not seem to increase the representativity of politicians in terms of gender; females are excluded from this representation anyways. For females, the effect of education on the the number of mayor or adjunct for the individuals bellow 40 cannot even be estimated since there are no observations.

5 Conclusion

In this paper, we document the impact of education on civic engagement and on political participation in the form of voting and running in the electoral competition. We bring several innovations to the literature.

First, our identification strategy relies directly on school building dates, and targets very precisely the population affected by the shocks of school supply. Indeed, very few Malian villages had a school for the eldest cohorts of our sample and there is usually no alternative to the schools of the village.For the eldest cohort (more than 40), school constructions multiply enrollment rates by a factor three. This makes the identification of the effect of education very precise and credible. We naturally use a quasi regression discontinuity design in order to estimate the causal impact of school openings.

Second, our data have more detailed information on political participation than other papers. In addition to voting behavior, we measure political participation in the form of running for elections and of being elected (we use the list of the elected representatives at the municipal level). We show the effects of education are very strong on civic engagement and mixed for political participation: for political participation, the effects are also strong but often non-significant. This is probably due a lack of statistical power: running for elections or supporting a party concern few individuals. And indeed, in the municipal council listings, we find more elected officials in the age groups treated by a school opening.

Finally, we have rich information on the social background of individuals. This original feature of the data addresses the question of power sharing between elite members and others in rural Mali. The

heterogeneity of the effects suggest that the impact is often concentrated on the (extended) elite of the village. This suggest that educational shock and the building of social capital and political participation in a society does not necessarily help to share power. If education increase civic engagement and political participation only among elites, this could give some extra power to these elites. (At least, it does not increase the power of the other groups)

Several interesting research questions remain. First, we concentrate on one dimension of social capital due to data availability. Education may also affect the other dimensions of social capital such as the degree of trust in the society or social norms. These two concepts may be key for the long run prosperity for a society. Second, we ignore whether an (exogenous) increase of social capital may affect policy outcomes. Does civic engagement and in particular a dense civil society promote better policies and do they limit corruption ? Does it make political institutions more inclusive, that is: do they represent a broader part of the population? We leave these questions for future research.

References

Acemoglu, D., 2006. A simple model of inefficient institutions. The Scandinavian Journal of Economics 108, 515–546.

Acemoglu, D., 2010. Institutions, factor prices and taxation: virtues of strong states? Tech. rep., National Bureau of Economic Research.

Acemoglu, D., Jackson, M. O., 2014. History, expectations, and leadership in the evolution of social norms. The Review of Economic Studies 82, 423–456.

Acemoglu, D., Robinson, J., 2001. A theory of political transitions. The American Economic Review 91, 938–963.

Acemoglu, D., Robinson, J. A., 2008. Persistence of power, elites, and institutions. American Economic Review 98, 267–293.

Aghion, P., Algan, Y., Cahuc, P., 2011. Civil society and the state: The interplay between cooperation and minimum wage regulation. Journal of the European Economic Association 9, 3–42.

Aghion, P., Algan, Y., Cahuc, P., Shleifer, A., 2010. Regulation and distrust. The Quarterly Journal of Economics 125, 1015–1049.

Algan, Y., Cahuc, P., 2010. Inherited trust and growth. The American Economic Review 100, 2060–2092.

Algan, Y., Cahuc, P., Sangnier, M., 2016. Trust and the welfare state: The twin peaks curve. The Economic Journal 126, 861–883.

Barreca, A. I., Guldi, M., Lindo, J. M., Waddell, G. R., 2011. Saving babies? revisiting the effect of very low birth weight classification. The Quarterly Journal of Economics 126, 2117–2123.

Baum, C., Schaffer, M., Stillman, S., 2010. Ivreg2: Stata module for extended instrumental variables/2sls, gmm and ac/hac, liml and k-class regression.

Besley, T., 2005. Political selection. The Journal of Economic Perspectives 19, 43–60.

Besley, T., Montalvo, J. G., Reynal-Querol, M., 2011. Do educated leaders matter?*. The Economic Journal 121, F205–227.

Bidner, C., Francois, P., 2011. Cultivating trust: Norms, institutions and the implications of scale. The Economic Journal 121, 1097–1129.

Bjørnskov, C., 2006. The multiple facets of social capital. European journal of political economy 22, 22–40.

Crespo Cuaresma, J., Oberdabernig, D. A., 2014. Education and the transition to sustained democracy. Department of economics working papers wuwp170, Vienna University of Economics and Business.

Croke, K., Grossman, G., Larreguy, H. A., Marshall, J., 2016. Deliberate disengagement: How education can decrease political participation in electoral authoritarian regimes. American Political Science Review 110, 579–600.

Dal Bó, E., Finan, F., Folke, O., Persson, T., Rickne, J., 2017. Who becomes a politician? Tech. rep., National Bureau of Economic Research.

De Tocqueville, A., 1835. Democracy in america, vol. 2. Saunders and Otley.

Dearmon, J., Grier, K., 2009. Trust and development. Journal of Economic Behavior & Organization 71, 210–220.

Dorsch, M. T., Maarek, P., 2015. Inefficient predation and political transitions. European Journal of Political Economy 37, 37–48.

Ferraz, C., Finan, F., 2010. Motivating politicians: The impacts of monetary incentives on quality and performance. Tech. rep., National Bureau of Economic Research.

Fortunato, P., Panizza, U., 2015. Democracy, education and the quality of government. Journal of Economic Growth 20, 333–363.

Friedman, W., Kremer, M., Miguel, E., Thornton, R., 2011. Education as liberation? Tech. rep., National Bureau of Economic Research.

Fukuyama, F., 2001. Social capital, civil society and development. Third world quarterly 22, 7–20.

Glaeser, E. L., Ponzetto, G. A., Shleifer, A., 2007. Why does democracy need education? Journal of economic growth 12, 77–99.

Johnson, J. W., 2003. Son-Jara: The Mande Epic, Mandekan/English edition with notes and commentary.(new edn.).

Keane, M. P., Merlo, A., 2010. Money, political ambition, and the career decisions of politicians. American Economic Journal: Microeconomics 2, 186–215.

Larreguy, H., Marshall, J., 2017. The effect of education on civic and political engagement in non-consolidated democracies: Evidence from Nigeria. Review of Economics and Statistics .

Murtin, F., Wacziarg, R., 2014. The democratic transition. Journal of Economic Growth 19, 141–181.

Paxton, P., 2002. Social capital and democracy: An interdependent relationship. American sociological review , 254–277.

Putnam, R. D., 2001. Bowling alone: The collapse and revival of American community. Simon and Schuster.

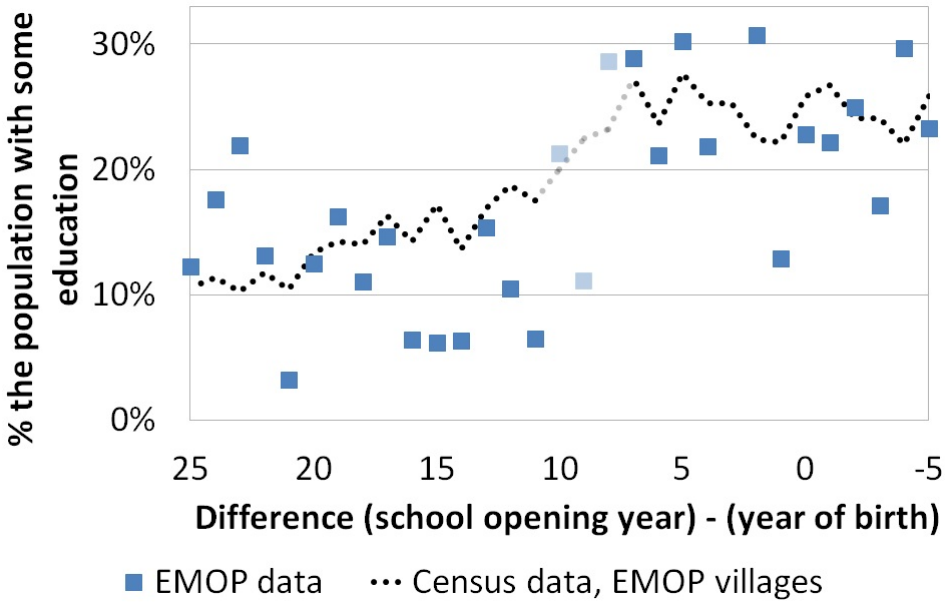
Putnam, R. D., Leonardi, R., Nanetti, R. Y., 1994. Making democracy work: Civic traditions in modern Italy. Princeton university press.

Sanborn, H., Thyne, C. L., 2014. Learning democracy: Education and the fall of authoritarian regimes. British Journal of Political Science 44, 773–797.

Schulz, D., 2012. Culture and customs of Mali. ABC-CLIO.

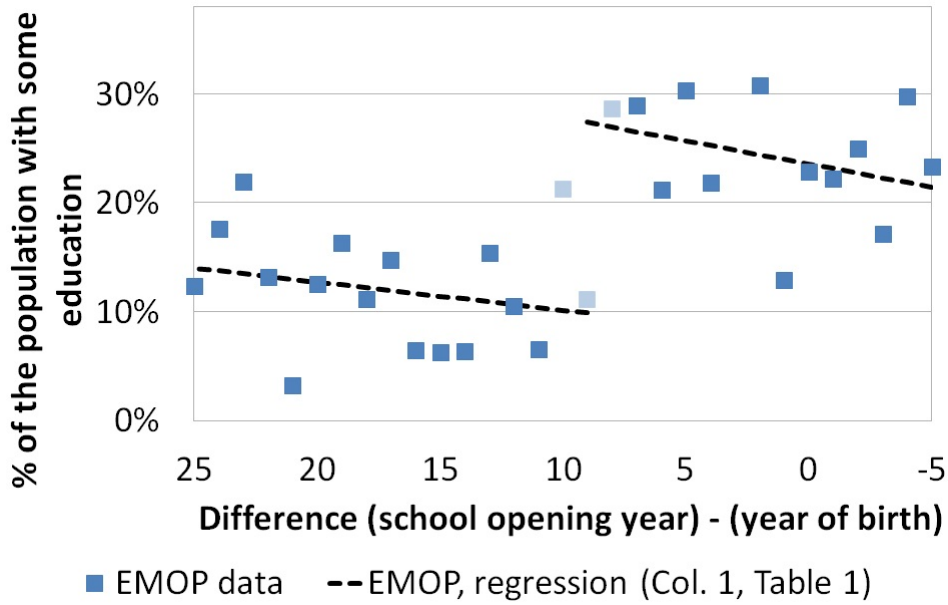
Tabellini, G., 2008. The scope of cooperation: Values and incentives. The Quarterly Journal of Economics 123, 905–950.

Figure 1: Chances to start primary school when a school opened between 5 years before birth and 25 years after birth (population aged more than 40 in 2011)



Sources: EMOP survey, and restriction of the Malian population census 2009 to the villages surveyed by EMOP, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date.

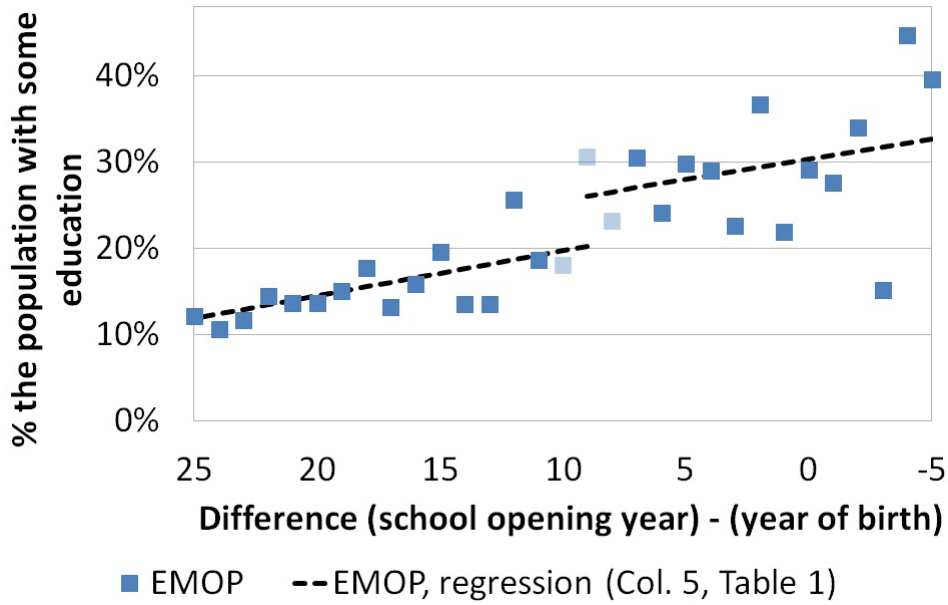
Figure 2: Education as a function of age at school opening and RDD estimation (population aged more than 40 in 2011)



Non-parametric estimation refer to sample averages. Parametric estimation refer to a simulation based on the estimation of column 1 in Table 2.

Sources: EMOP Survey, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date.

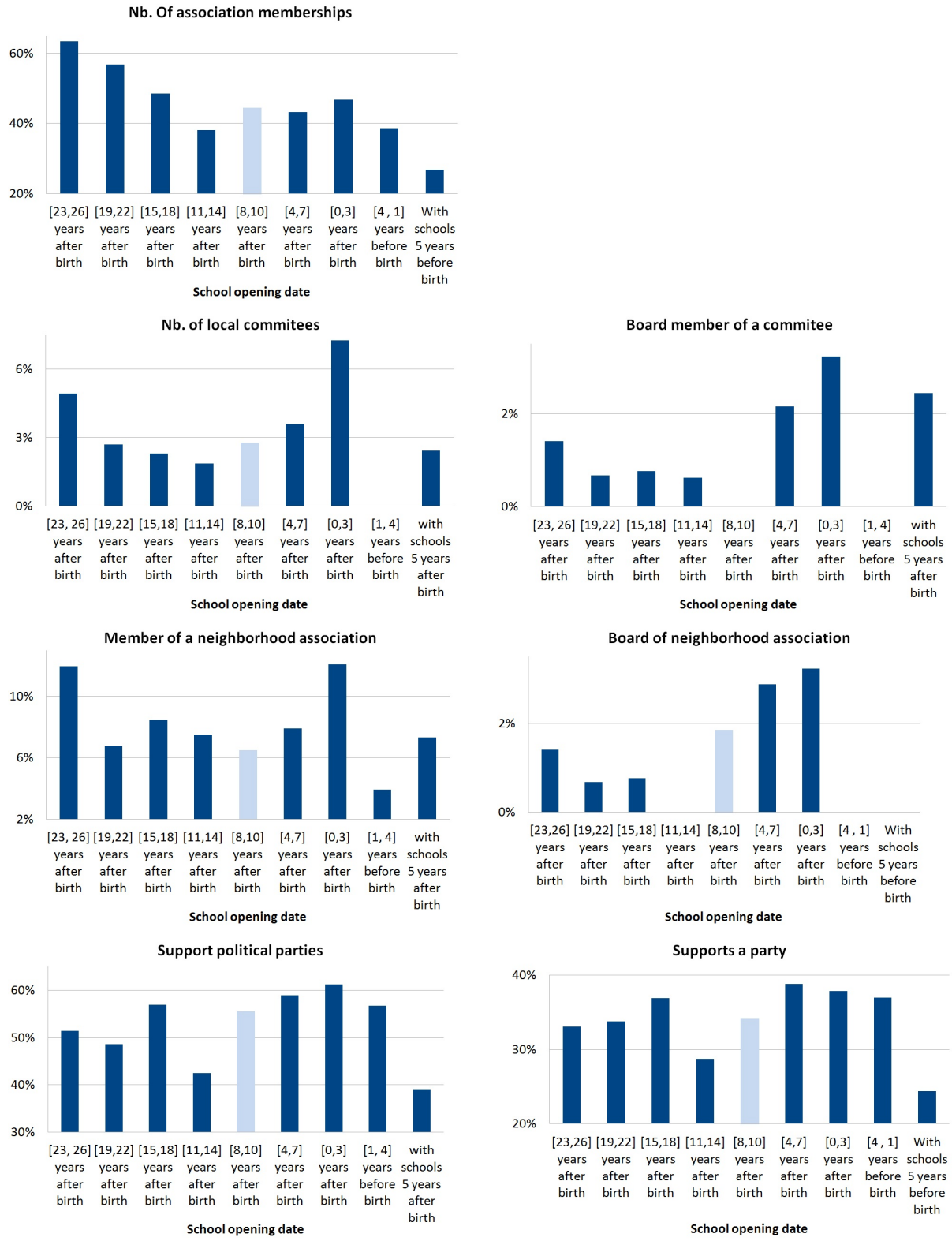
Figure 3: Education as a function of age at school opening and RDD estimation (population aged 20 to 39 in 2011)



Non-parametric estimation refer to sample averages. Parametric estimation refer to a simulation based on the estimation of column 5 in Table 2.

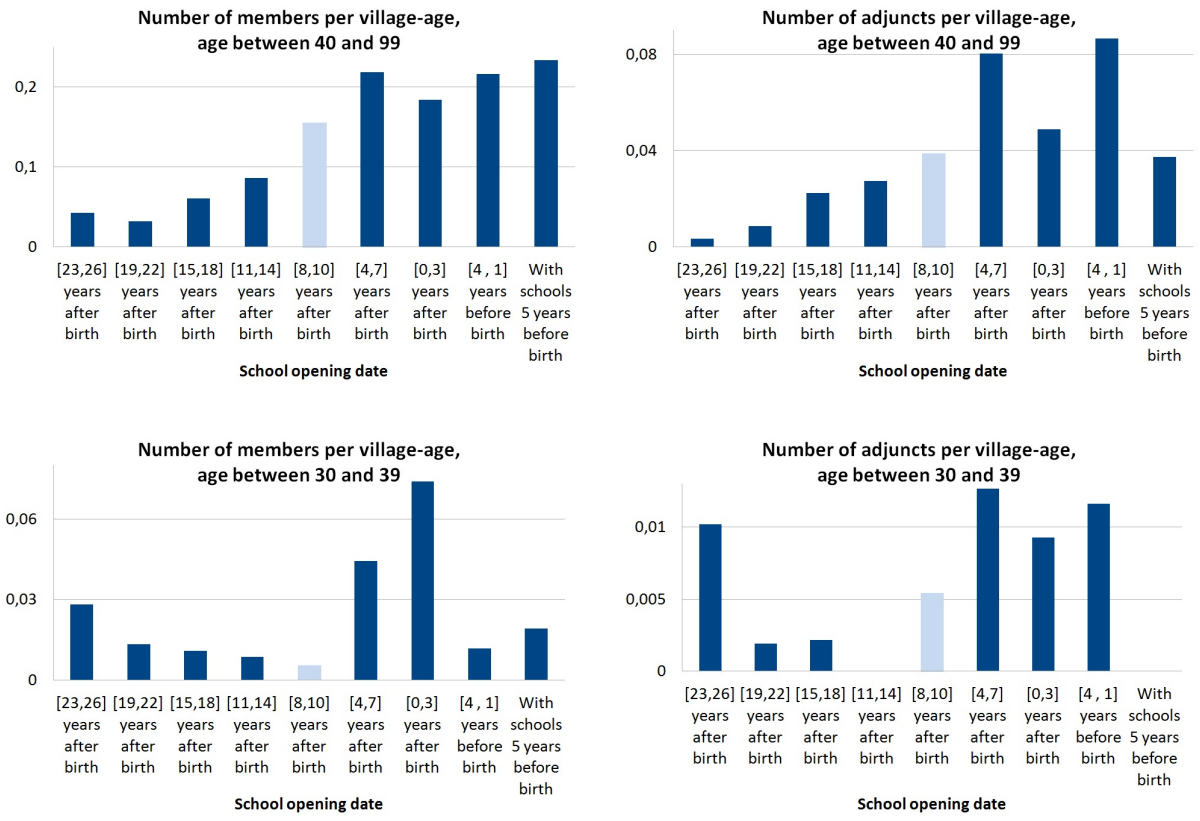
Sources: EMOP Survey, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date.

Figure 4: Political participation and school opening dates (population aged more than 40 in 2011)



Sources: EMOP survey, author's calculations. The sample is restricted to the population with a date of birth less than 26 years before the first school opening date.

Figure 5: Number of municipal council member per village-age and school opening dates (ages greater than 40 in 2011)



Sources: EMOP survey, author's calculations. The sample is restricted to the population with a date of birth less than 26 years before the first school opening date.

Table 1: Descriptive Statistics

	(1)				
	mean	sd	min	max	count
etescol	0.194	0.395	0	1	4005
nbrpri_age9village	0.403	0.685	0	6	4249
nbasso	0.370	0.610	0	3	4249
tot_candidat	0.016	0.168	0	3	4028
tot_presencecon2	0.088	0.313	0	2	4041
tot_partisupporter	0.448	0.702	0	3	4040
tot_election_participation	2.803	1.604	0	4	3858
assoc_coges	0.009	0.097	0	1	4249
bureau_coges	0.001	0.038	0	1	4249
assoc_quart	0.084	0.277	0	1	4249
bureau_quart	0.005	0.072	0	1	4249
nb_other_asso	0.259	0.487	0	3	4249
parti	0.098	0.297	0	1	4109
proparti	0.299	0.458	0	1	4108
campagne	0.046	0.208	0	1	4041
M4	26.924	5.146	20	39	4249
M3	0.446	0.497	0	1	4249
tjsla	0.737	0.440	0	1	4249
tjsmali	0.908	0.290	0	1	4249
varchefloc2	0.454	0.498	0	1	4249
scolhaute	0.284	0.451	0	1	4249
N	4249				

Sources: EMOP Survey, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth).

Table 2: Estimation of the effect of a primary school opening on enrollment (equation (2))

Age group	40 or more				20 to 39			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Effect of a primary school	0.222***	0.216***	0.208***	0.276***	0.0589	0.119***	0.102**	0.155**
on enrollment ($\hat{\theta}_r$)	(0.0489)	(0.0509)	(0.0537)	(0.105)	(0.0476)	(0.0407)	(0.0433)	(0.0645)
$(a_{sc}-9)\mathcal{T}_{iv}$	-0.00454	-0.00300	-0.00537	-0.0169	0.00427	0.00721	0.115***	-0.00972
	(0.00486)	(0.00526)	(0.00564)	(0.0277)	(0.00509)	(0.00506)	(0.0421)	(0.0187)
$(a_{sc}-9)(1-\mathcal{T}_{iv})$	-0.00543*	-0.00182	-0.00518	-0.00705	0.00642***	0.00813***	0.115***	0.0106
	(0.00280)	(0.00364)	(0.00463)	(0.0166)	(0.00205)	(0.00202)	(0.0385)	(0.00778)
$(a_{sc}-9)^2\mathcal{T}_{iv}$				0.000874				0.00108
				(0.00167)				(0.00116)
$(a_{sc}-9)^2(1-\mathcal{T}_{iv})$				-0.000296				0.000141
				(0.000963)				(0.000399)
Village fixed-effects		Yes	Yes	Yes		Yes	Yes	Yes
Year of birth dummies			Yes				Yes	
Observations	992	992	992	992	3,629	3,629	3,629	3,629
R^2 (with F.E. : within R^2)	0.035	0.043	0.098	0.044	0.028	0.025	0.034	0.026
Number of villages	155	155	155	155	296	296	296	296
F-test of $\hat{\theta}_r$	20.71	18.01	15.04	6.961	1.535	8.586	5.511	5.799
Corresponding p-value	$< 10^{-4}$	$< 10^{-4}$	0.000168	0.00938	0.217	0.00375	0.0198	0.0169

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth).

Table 3: Prediction of the number of observations and characteristics and the observations (equations (4) and (5)), individuals aged 40 or more

	Nb. of obs.	Nb. of former hh. members having left	Current hh. members: Has never left the village	Current hh. members: Has never left Mali	Current hh. members: Sh. of males	Current hh. members: From a chief Family
	(1)	(2)	(3)	(4)	(5)	(6)
Effect of a school ($\hat{\theta}_r$)	-0.0667	-0.00564	-0.104	0.0138	0.0267	-0.0423
	(0.0439)	(0.0172)	(0.0726)	(0.0691)	(0.0862)	(0.0542)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,129	3,129	769	769	769	815
R^2 (within village)	0.031	0.010	0.005	0.007	0.003	0.005
Number of villages	164	164	155	155	155	156
Average of the dependant variable	0.294	0.0233	0.739	0.751	0.498	0.411

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Table 4: Prediction of the number of observations and characteristics and the observations (equations (4) and (5)), individuals aged 20 to 39

	Nb. of obs.	Nb. of former hh. members having left	Current hh. members			
			Has never left the village	Has never left Mali	Sh. of males	From a chief Family
	(1)	(2)	(3)	(4)	(5)	(6)
Effect of a school ($\hat{\theta}_r$)	0.138	-0.0680*	-0.0182	0.0149	-0.0338	0.0657
	(0.128)	(0.0355)	(0.0468)	(0.0266)	(0.0545)	(0.0408)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,972	3,972	2,151	2,151	2,151	2,286
R^2 (within village)	0.034	0.002	0.003	0.016	0.001	0.003
Number of villages	296	296	296	296	296	296
Average of the dependant variable	0.911	0.120	0.731	0.893	0.453	0.450

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Table 5: Estimation of the effect of education on political participation (model (3)), individuals aged 40 or more

	Nb. of association memberships		Candidate to local elections		Presence in local Councils		Supports political parties		Participation to elections	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ever been enrolled	0.204***	1.069**	0.0222	0.164	0.181***	0.440	0.271***	1.075**	0.150	-0.114
	(0.0657)	(0.522)	(0.0188)	(0.159)	(0.0491)	(0.314)	(0.0816)	(0.516)	(0.109)	(0.771)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	992	982	967	957	968	958	965	955	932	920
R^2 (within village)	0.019	-0.345	0.004	-0.107	0.025	-0.027	0.027	-0.177	0.004	-0.001
Number of villages	155	145	154	144	154	144	154	144	153	141
Underidentification F-stat		13.66		14.71		14.69		14.13		13.47
Corresponding p-value		0.000219		0.000125		0.000127		0.000171		0.000243

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$. The "Underidentification F-stat" is the Kleibergen-Paap rank LM statistic reported by the stata command ivreg2 (Baum, Schaffer, and Stillman, 2010).

Table 6: Estimation of the effect of education on political participation (equation (3)), individuals aged 40 or more (2/2)

	Nb. of Association memberships	Sub-indices					Supports political Parties	Sub-indices		
		Nb. of local commitees	Board member of a commitee	Member of a neighborhood association	Board of neighborhood association	Number of other associations		Political Party Member	Supports a party	Involved in an electoral campaign
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ever been enrolled	1.069**	0.358**	0.195*	0.303*	0.227**	0.136	1.075**	0.0219	0.737**	0.287
	(0.522)	(0.159)	(0.101)	(0.183)	(0.102)	(0.396)	(0.516)	(0.212)	(0.323)	(0.179)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	982	982	982	982	982	982	955	968	965	958
Number of villages	145	145	145	145	145	145	144	145	145	144

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Table 7: Estimation of the effect of education on political participation (model (3)), individuals aged 20 to 39

	Nb. of association memberships		Candidate to local elections		Presence in local Councils		Supports political parties		Participation to elections	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ever been enrolled	-0.0799***	-0.122	0.00470	-0.0258	0.0201	0.287	0.0617*	0.420	-0.109	-3.097
	(0.0276)	(0.420)	(0.00788)	(0.107)	(0.0177)	(0.250)	(0.0316)	(0.621)	(0.0774)	(2.433)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,629	3,625	3,438	3,432	3,449	3,443	3,448	3,442	3,289	3,282
R^2 (within village)	0.017	0.016	0.001	-0.005	0.017	-0.101	0.008	-0.045	0.108	-0.509
Number of grappe	296	292	296	290	296	290	296	290	296	289
Underidentification F-stat		7.896		6.097		6.180		6.273		5.331
Corresponding p-value		0.00496		0.0135		0.0129		0.0123		0.0210

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$. The "Underidentification F-stat" is the Kleibergen-Paap rank LM statistic reported by the stata command ivreg2 (Baum et al., 2010).

Table 8: Estimation of the effect of a primary school opening on political participation split by enrollment prior to the school opening (equation (B.1)), individuals aged 40 or more

	Nb. of Association memberships	Sub-indices					Supports political Parties	Sub-indices		
		Nb. of local commitees	Board member of a commitee	Member of a neighborhood association	Board of neighborhood association	Number of other associations		Political Party Member	Supports a party	Involved in an electoral campaign
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of a school $\hat{\theta}$ * low enrollment prior to the school opening	1.205** (0.583)	0.465** (0.191)	0.254** (0.121)	0.275 (0.210)	0.275** (0.128)	0.166 (0.448)	1.124** (0.571)	0.0499 (0.285)	0.847** (0.357)	0.257 (0.200)
Effect of a school $\hat{\theta}$ * high enrollment prior to the school opening	0.344 (0.749)	-0.0727 (0.169)	-0.0456 (0.123)	0.218 (0.427)	0.215 (0.201)	0.0811 (0.709)	0.650 (0.667)	0.698 (0.468)	-0.0400 (0.417)	0.575 (0.556)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linear trends in age at school opening date, interacted with low enrollment prior to school opening	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	982	982	982	982	982	982	955	968	965	958
Number of villages	145	145	145	145	145	145	144	145	145	144
Test: the coefs are equal	1.023	5.616	3.793	0.0208	0.0649	0.0122	0.321	1.426	3.065	0.301
Corresponding p-value	0.312	0.0178	0.0515	0.885	0.799	0.912	0.571	0.232	0.0800	0.583
Underidentification F-stat	13.45	13.45	13.45	13.45	13.45	13.45	14.92	12.97	12.89	14.1
Corresponding p-value	0.000245	0.000245	0.000245	0.000245	0.000245	0.000245	0.000112	0.000317	0.000331	0.000170

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$. The "Underidentification F-stat" is the Kleibergen-Paap rank LM statistic reported by the stata command ivreg2 (Baum et al., 2010).

Table 9: Estimation of the effect of a primary school opening on political participation split by founding family of the village (equation (B.2)), individuals aged 40 or more

	Nb. of Association memberships	Sub-indices					Supports political Parties	Sub-indices		
		Nb. of local commitees	Board member of a commitee	Member of a neighborhood association	Board of neighborhood association	Number of other associations		Political Party Member	Supports a party	Involved in an electoral campaign
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of a school $\hat{\theta}$	-0.0336	0.276	0.109	0.215	0.144	-0.703	1.552**	0.283	0.960**	0.362
* not a chief family	(0.660)	(0.201)	(0.120)	(0.288)	(0.101)	(0.669)	(0.750)	(0.334)	(0.460)	(0.254)
Effect of a school $\hat{\theta}$	2.494***	0.480**	0.310**	0.414	0.327*	1.204**	0.595	-0.241	0.529	0.229
* chief family	(0.857)	(0.227)	(0.158)	(0.292)	(0.177)	(0.533)	(0.699)	(0.277)	(0.439)	(0.215)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linear trends in age at school opening date, interacted with low enrollment prior to school opening	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	982	982	982	982	982	982	955	968	965	958
Number of villages	145	145	145	145	145	145	144	145	145	144
Test: the coefs are equal	6.224	0.521	1.107	0.205	0.957	5.137	0.829	1.330	0.463	0.173
Corresponding p-value	0.0126	0.470	0.293	0.651	0.328	0.0234	0.363	0.249	0.496	0.678
Underidentification F-stat	6.929	6.929	6.929	6.929	6.929	6.929	7.748	6.445	6.425	7.774
Corresponding p-value	0.00848	0.00848	0.00848	0.00848	0.00848	0.00848	0.00538	0.0111	0.0113	0.00530

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Table 10: Estimation of the effect of a primary school opening on the chances to have a municipality council member in the village-age (equation (6))

	Village-age with age between 40 and 99				Village-age with age between 20 and 39			
	Nb. of members		Nb. of adjuncts or mayor		Nb. of members		Nb. of adjuncts or mayor	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Effect of a school ($\hat{\theta}$)	0.0988**	0.105**	0.0377	0.0396	0.0560***	0.0464***	0.0139	0.00972
	(0.0466)	(0.0456)	(0.0277)	(0.0271)	(0.0168)	(0.0163)	(0.0111)	(0.0106)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2,130	2,130	2,130	2,130	2,194	2,194	2,194	2,194
R^2 (within village)	0.036	0.044	0.017	0.019	0.007	0.009	0.003	0.002
Number of villages	97	97	97	97	148	148	148	148
Average of dep. var.	0.116	0.116	0.0352	0.0352	0.0177	0.0177	0.00373	0.00373

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Table 11: Estimation of the effect of a primary school opening on the chances to have a municipality council member in the village-age

	Village-age with age between 40 and 99		Village-age with age between 20 and 39	
	Nb. of members	Nb. of adjuncts or mayor	Nb. of members	Nb. of adjuncts or mayor
	(1)	(2)	(3)	(4)
Effect of a school $\hat{\theta}$ low enrollment prior to the school opening	0.138**	0.0334	0.0504**	0.00240
	(0.0529)	(0.0244)	(0.0210)	(0.00902)
Effect of a school $\hat{\theta}$ high enrollment prior to the school opening	-0.00790	0.0244	0.00785	0.0134
	(0.0529)	(0.0244)	(0.0210)	(0.00902)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes
Linear trends in age at school opening date, interacted with low enrollment prior to school opening	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes
Observations	2,130	2,130	2,194	2,194
R^2 (within village)	0.046	0.025	0.008	0.005
Number of villages	97	97	148	148

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Table 12: Estimation of the effect of a primary school opening on the chances to have a municipality council member in the village-age

	Village-age with age between 40 and 99		Village-age with age between 20 and 39	
	Nb. of members	Nb. of adjuncts or mayor	Nb. of members	Nb. of adjuncts or mayor
	(1)	(2)	(3)	(4)
	Nb. of members from a chief family			
Effect of a school $\hat{\theta}$	0.0988***	0.0348	0.0327***	0.0137
	(0.0305)	(0.0231)	(0.0125)	(0.00981)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes
Observations	2,130	2,130	2,084	2,084
R^2 (within village)	0.027	0.015	0.006	0.005
	Nb. of members not from a chief family			
Effect of a school $\hat{\theta}$	0.00335	0.00249	0.0105	-0.00395
	(0.0285)	(0.0122)	(0.0116)	(0.00348)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes
Observations	2,130	2,130	2,194	2,194
R^2 (within village)	0.019	0.005	0.006	0.003
	Nb. of female members			
Effect of a school $\hat{\theta}$	-0.00155	0.00252	-0.00413	.
	(0.0127)	(0.00576)	(0.00407)	.
Linear trends in age at school opening date	Yes	Yes	Yes	.
Village fixed-effects	Yes	Yes	Yes	.
Observations	2,130	2,130	2,194	.
R^2 (within village)	0.003	0.001	0.001	.
	Nb. of male members			
Effect of a school $\hat{\theta}$	0.112**	0.0371	0.0505***	0.00972
	(0.0449)	(0.0278)	(0.0171)	(0.0106)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes
Observations	2,130	2,130	2,194	2,194
R^2 (within village)	0.041	0.018	0.009	0.002

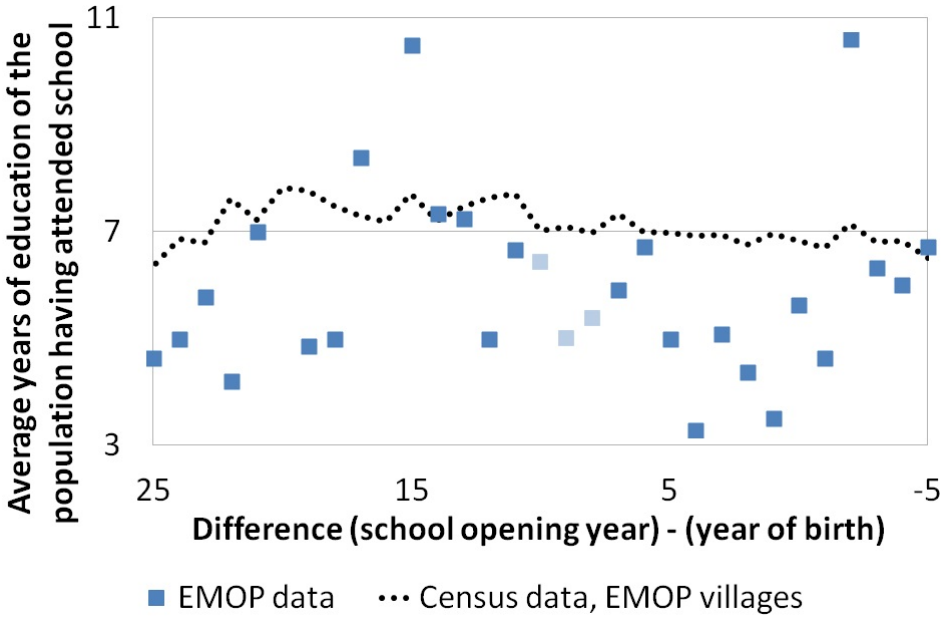
Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

Appendices

A Additional Tables and Figures

A.1 Link between school openings and enrollment

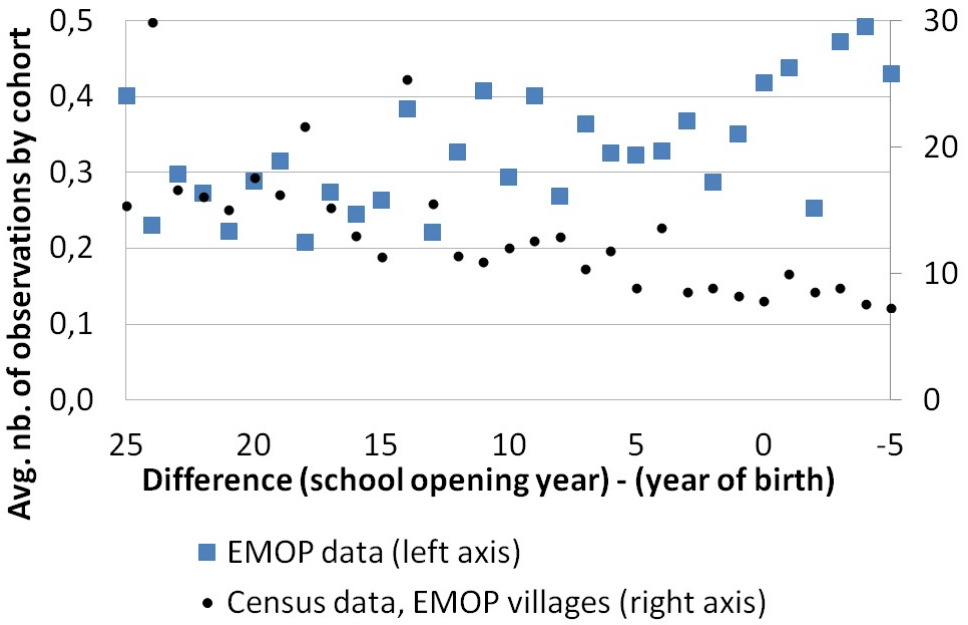
Figure A.1: Years of education for those who started primary school when a school opened between 5 years before birth and 25 years after birth (population aged more than 40 in 2011)



Sources: Restriction of the Malian population census 2009 to the villages surveyed by EMOP, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date.

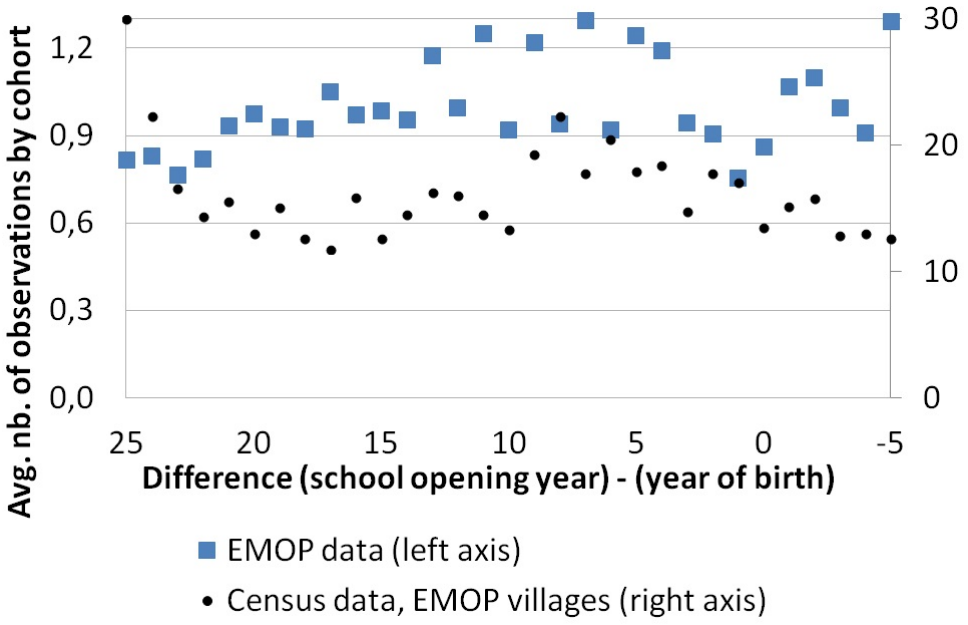
A.2 Selection

Figure A.2: Number of observation per village-age as a function of age at a school opening (population aged more than 40 in 2011)



Sources: EMOP sample and restriction of the Malian population census 2009 to the villages surveyed by EMOP, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date.

Figure A.3: Number of observation per village-age as a function of age at a school opening (population aged more than 20 to 39 in 2011)



Sources: EMOP sample and restriction of the Malian population census 2009 to the villages surveyed by EMOP, author's calculations. The sample is restricted to the population with a date of birth close to a school opening date.

A.3 Estimations split by gender

Table A.1: Estimation of the effect of a primary school opening on political participation split by gender (equation (B.2)), individuals aged 40 or more

	Nb. of Association memberships	Sub-indices					Supports political Parties	Sub-indices		
		Nb. of local commitees	Board member of a commitee	Member of a neighborhood association	Board of neighborhood association	Number of other associations		Political Party Member	Supports a party	Involved in an electoral campaign
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Effect of a school $\hat{\theta}$	0.0588	0.173	0.132	0.199	0.0797	-0.289	0.452	0.124	0.170	0.132
* female	(0.428)	(0.133)	(0.0866)	(0.172)	(0.0802)	(0.329)	(0.538)	(0.192)	(0.314)	(0.202)
Effect of a school $\hat{\theta}$	4.146	0.928	0.385	0.672	0.679	1.350	3.091	-0.206	2.439	0.807
* male	(3.115)	(0.751)	(0.315)	(0.621)	(0.552)	(1.564)	(2.500)	(0.612)	(1.902)	(0.697)
Linear trends in age at school opening date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Linear trends in age at school opening date, interacted with low enrollment prior to school opening	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	982	982	982	982	982	982	955	968	965	958
Number of villages	145	145	145	145	145	145	144	145	145	144
Test: the coefs are equal	1.546	0.931	0.682	0.512	1.034	0.978	0.937	0.259	1.216	0.755
Corresponding p-value	0.214	0.335	0.409	0.474	0.309	0.323	0.333	0.611	0.270	0.385
Underidentification F-stat	2.153	2.153	2.153	2.153	2.153	2.153	2.241	2.129	2.153	2.215
Corresponding p-value	0.142	0.142	0.142	0.142	0.142	0.142	0.134	0.145	0.142	0.137

Sources: EMOP Survey, author's calculations. Standard errors robust to clustering by municipality in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample is restricted to the population with a date of birth close to a school opening date (between 5 years before birth and 7 years after birth or between 11 and 25 years after birth). Linear trends in age at school opening date: controls for $(a_{sc} - 9)\mathcal{T}_{iv}$ and $(a_{sc} - 9)(1 - \mathcal{T}_{iv})$.

B Estimated equations of sub-sample estimates

The first specification splits the effect of education on political participation between school openings with high or low education prior to the school opening. This gives the following model:

$$\left\{\begin{array}{rlll} P_{vci} = \mu_v^P + & \alpha^{PL} E_{vci}^{PL} & +\theta_r^{PL}(a_{sc}-9)(1-\mathcal{T}_{iv})^L + \theta_l^{PL}(a_{sc}-9)\mathcal{T}_{iv}^L & \\ + & \alpha^{PU} E_{vci}^{PU} & +\theta_r^{PU}(a_{sc}-9)(1-\mathcal{T}_{iv})^U + \theta_l^{PU}(a_{sc}-9)\mathcal{T}_{iv}^U + \varepsilon_{vci}^P & \\ E_{vci} = \mu_v^E + & \gamma^{EL}\mathcal{T}_{iv}^{EL} & +\theta_r^{EL}(a_{sc}-9)(1-\mathcal{T}_{iv})^L + \theta_l^{EL}(a_{sc}-9)\mathcal{T}_{iv}^L & \\ + & \gamma^{EU}\mathcal{T}_{iv}^{EU} & +\theta_r^{EU}(a_{sc}-9)(1-\mathcal{T}_{iv})^U + \theta_l^{EU}(a_{sc}-9)\mathcal{T}_{iv}^U + \varepsilon_{vci}^E & \end{array}\right. \tag{B.1}$$

where the exposant L means that the variable is computed for schools with low enrollment rate prior to the school opening (and takes value 0 for other schools). I consider only one school per individual (see footnote 5 above) so the definition of E_{vci}^L is not ambiguous. The exposant U means that the variable is computed from schools with high enrollment rate prior to the school opening. The coefficient α^L measures the causal effect of education due to school openings with low enrollment rate prior to the school opening, the coefficient α^U measures the causal effect of schools with high enrollment rate prior to the school opening.

Table 8 estimate equation (B.1), and report the coefficients α^L and α^U. It is also possible to interact the estimations with an individual characteristic. This leads to the following equation

$$\left\{\begin{array}{rlll} P_{vci} = \mu_v^P + & \left[\alpha^{P0}E_{vci} + \theta_r^{P0}(a_{sc}-9)(1-\mathcal{T}_{iv}) + \theta_l^{P0}(a_{sc}-9)\mathcal{T}_{iv}\right] S_{vci} & +\beta^P S_{vci} & \\ + & \left[\alpha^{P1}E_{vci} + \theta_r^{P1}(a_{sc}-9)(1-\mathcal{T}_{iv}) + \theta_l^{P1}(a_{sc}-9)\mathcal{T}_{iv}\right] \bar{S}_{vci} & +\varepsilon_{vci}^P & \\ E_{vci} = \mu_v^E + & \left[\gamma^{E0}\mathcal{T}_{iv} + \theta_r^{E0}(a_{sc}-9)(1-\mathcal{T}_{iv}) + \theta_l^{E0}(a_{sc}-9)\mathcal{T}_{iv}\right] S_{vci} & +\beta^E S_{vci} & \\ + & \left[\gamma^{E1}\mathcal{T}_{iv} + \theta_r^{E1}(a_{sc}-9)(1-\mathcal{T}_{iv}) + \theta_l^{E1}(a_{sc}-9)\mathcal{T}_{iv}\right] \bar{S}_{vci} & +\varepsilon_{vci}^E & \end{array}\right. \tag{B.2}$$

where S is a binary variable, and $\bar{S} = 1 - S$ is its complement. I use two variables for S: a dummy for households where the head belongs to a chief family of the village, and a dummy for females. For these two variables, Tables 9 and A.1 respectively estimate equation (B.2) .